

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Divisional Patent Application of: )  
**Richard W. Gross et al.** ) Group Art Unit: **2662 (expected)**  
New Divisional Application based on Serial ) Examiner: **Ahmed Elallam (expected)**  
No. 10/189,212  
Filed: **August 7, 2003** )  
For: ***SPLITTERLESS MULTICARRIER*** )  
***MODEM***

**INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

August 7, 2003

Sir:

In accordance with the duty of disclosure as set forth in 37 C.F.R. §1.56, Applicants hereby submit the following information in conformance with 37 C.F.R. §§ 1.97 and 1.98. Pursuant to 37 C.F.R. § 1.98, a copy of each of the documents were cited in the parent application.

The documents are being submitted within three (3) months of the filing of this application or entry into the national stage of this application, or before the first Office Action on the merits, whichever is later, therefore no fee or certification is required under 37 C.F.R. § 1.97(b).

It is requested that the accompanying information disclosure statement be considered and made of record in the above-captioned application. To assist the Examiner, the documents are listed on the attached form PTO-1449. It is respectfully requested that an Examiner initialed copy of this form be returned to the undersigned.

The Commissioner is hereby authorized to charge any fees connected with this filing which may be required now, or credit any overpayment to Deposit Account No. 19-2380 (081513-124).

Respectfully submitted,

By:

  
Jason H. Vick  
Registration No. 45,285

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				First Named Inventor	Richard W. Gross et al.
				Class	2662 (expected)
Examiner Name	Ahmed Elallam (expected)				
Sheet	1	of	5	Attorney Docket Number	081513-336

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		Number	Kind Code <sup>2</sup> (if known)			
		3,573,380		Darlington	04/06/1971	
		4,131,766		Narasimha	12/26/1978	
		4,568,156		Dane	02/04/1986	
		4,679,227		Hughes-Hartogs	07/07/1987	
		4,731,816		Hughes-Hartogs	03/15/1988	
		4,802,190		Schouhamer Immink	01/31/1989	
		4,912,763		Galand et al.	03/27/1990	
		5,048,054		Eyuboglu et al.	09/10/1991	
		5,128,964		Mallory	07/07/1992	
		5,206,886		Bingham	04/27/1993	

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		Office <sup>3</sup>	Number <sup>4</sup> Kind Code <sup>5</sup> (if known)				
		EP 0 473 465	B1		03/04/1992		
		EP 0 652 677	A2		05/10/1995		
		EP 0 703 685	A2		03/27/1996		
		EP 0 753 947	A1		01/15/1997		
		EP 0 762 701	A2		03/12/1997		

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		John A. C. Bingham (May 1990), "Multicarrier Modulation For Data Transmission: An Idea Whose Time Has Come," <u>IEEE Communications Magazine</u> , pp. 5-14.	
		Shoham et al. (September 1988), "Efficient Bit Allocation for an Arbitrary Set of Quantizers," <u>IEEE Transactions on Acoustics, Speech and Signal Processing</u> , 36(9): 1445-1453.	

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		5,285,474		Chow et al.	02/08/1994	
		5,327,574		Monma et al.	07/05/1994	
		5,400,322		Hunt et al.	03/21/1995	
		5,428,790		Harper et al.	06/27/1995	
		5,452,288		Rahuel et al.	09/19/1995	
		5,479,447		Chow et al.	12/26/1995	
		5,497,398		Tzannes et al.	03/05/1996	
		5,521,906		Grube et al.	05/28/1996	
		5,533,008		Grube et al.	07/02/1996	
		5,555,244		Gupta et al.	09/10/1996	

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		Office <sup>3</sup>	Kind Code <sup>5</sup> (if known) Number <sup>4</sup>				
			EP 0 812 087	A2		12/10/1997	
			EP 0 820 168	A2		01/21/1998	
			EP 0 840 474	A2		05/06/1998	
			EP 0 905 948	A2		03/31/1999	
			WO 86/07223			12/04/1986	

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		John M. Cioffi "A Multicarrier Primer,;" <u>Amati Communications Corporation and Stanford University</u> , pp.1-18.				
		John A. C. Bingham (May 1996), "RFI Suppression in Multicarrier Transmission Systems," Amati Communications, <u>IEEE Communications Magazine</u> , pp. 1026-1030.				

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		Number	Kind Code <sup>3</sup> (if known)			
		5,596,604		Cioffi et al.	01/21/1997	
		5,598,435		Williams	01/28/1997	
		5,625,651		Cioffi	04/29/1997	
		5,636,246		Tzannes et al.	06/03/1997	
		5,644,573		Bingham et al.	07/01/1997	
		5,673,290		Cioffi	09/30/1997	
		5,731,706		Koeman et al.	03/24/1998	
		5,805,669		Bingel et al.	09/08/1998	
		5,812,599		Van Kerckhove	09/22/1998	
		5,822,372		Emami	10/13/1998	

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			WO 97/15131		04/24/1997	
			WO 98/10556		03/12/1998	
			WO 98/27665		06/25/1998	
			WO 98/57472		12/17/1998	
			WO 98/59476		12/30/1998	

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		Atungsiri et al. (June 1997), "Multirate Coding for Mobile Communications Link Adaptation," <u>IEEE Proc. Commun.</u> , 144(3):211-216.	
		Related Application USSN. 09/597,926 with a copy of Preliminary Amendment as filed.	

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		Number	Kind Code <sup>2</sup> (if known)			
		5,822,374		Levin	10/13/1998	
		5,832,387		Bae et al.	11/03/1998	
		5,852,633		Levin et al.	12/1998	
		5,903,608		Chun	05/1999	
		5,933,454		Cioffi	08/03/1999	
		5,960,036		Johnson et al.	09/1999	
		6,005,893		Hyll	12/1999	
		6,014,425		Bingel et al.	01/11/2000	
		6,028,486		Andre	02/22/2000	
		6,052,411		Mueller et al.	04/18/2000	

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		Office <sup>3</sup>	Number <sup>4</sup> Kind Code <sup>2</sup> (if known)				
			WO 99/16224		09/09/1998		
			WO 99/18701		04/15/1999		
			JP 60-112357		06/18/1985		
			JP 62-502932		11/19/1987		
			JP 11-168515		06/22/1999		

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		6,055,297		Terry	04/25/2000	
		6,061,392		Bremer et al.	05/09/2000	
		6,065,060		Liu et al.	04/2000	
		6,072,779		Tzannes et al.	06/06/2000	
		6,073,179		Liu et al.	06/06/2000	
		6,092,122		Liu et al.	07/18/2000	
		6,101,216		Henderson et al.	08/08/2000	
		6,128,335		Liu et al.	10/02/2000	
		6,144,696		Shively et al.	11/07/2000	
		6,161,203		Zuranski et al.	12/12/2000	
		6,219,378		Wu	04/17/2001	
		6,229,855		Takatori et al.	05/08/2001	

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